



ANTIMICROBIAL PROTEINS

Manners et al.

Appln. No.: 09/331,631 Atty Docket: CULLN23.001APC

REPLACEMENT SHEET

1/21

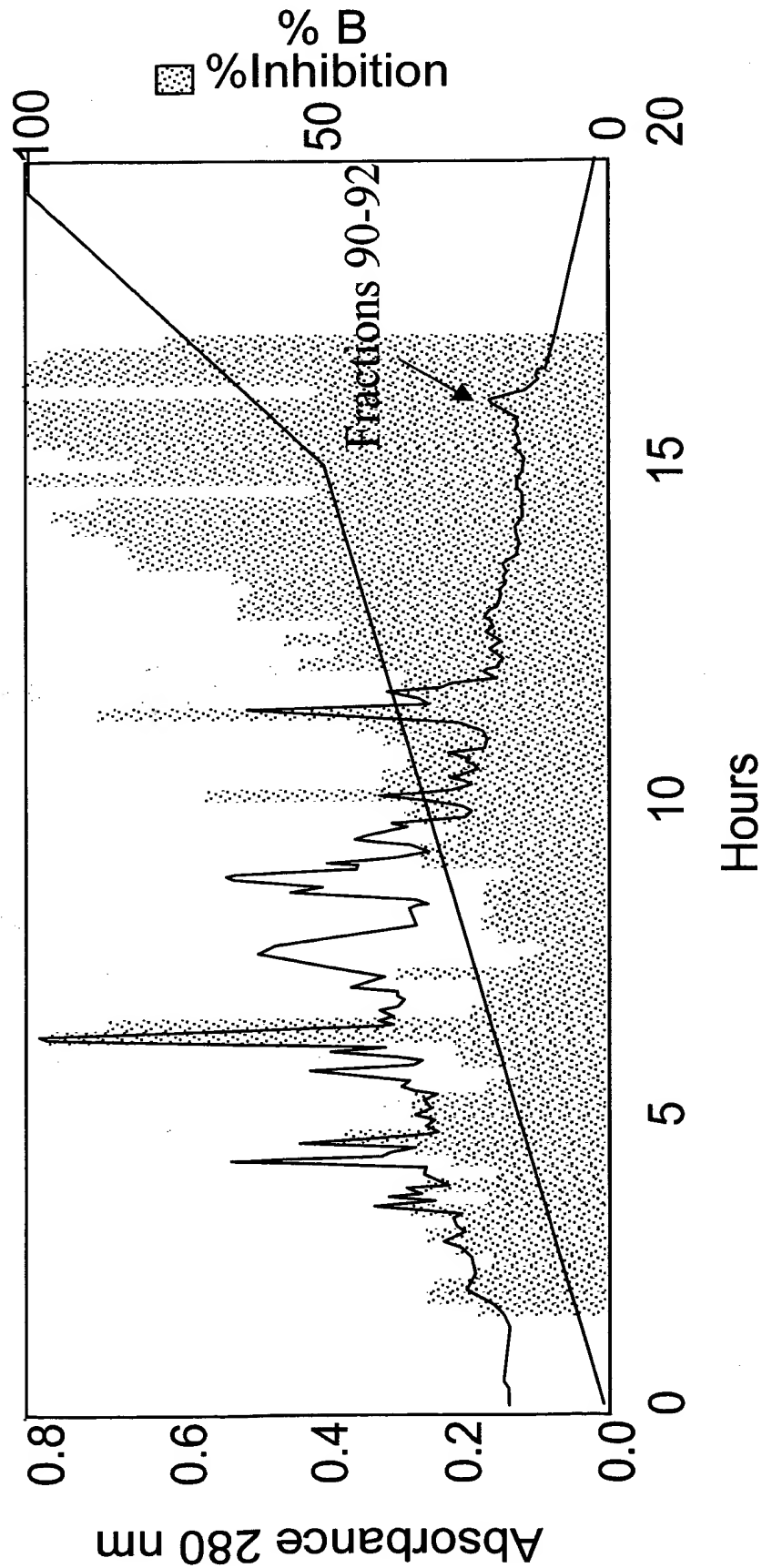


Fig. 1

ANTIMICROBIAL PROTEINS
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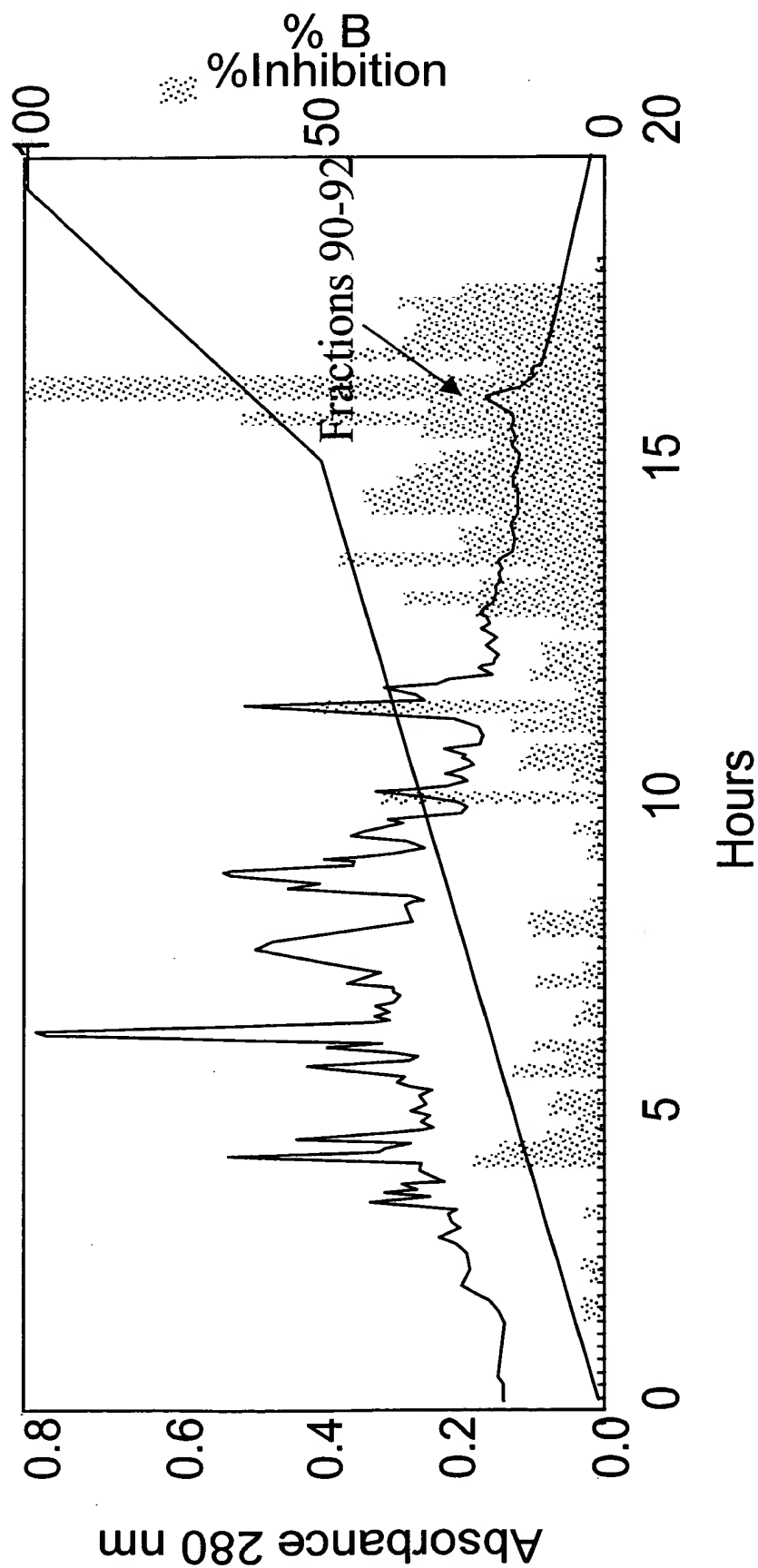


Fig. 2

ANTIMICROBIAL PROTEINS
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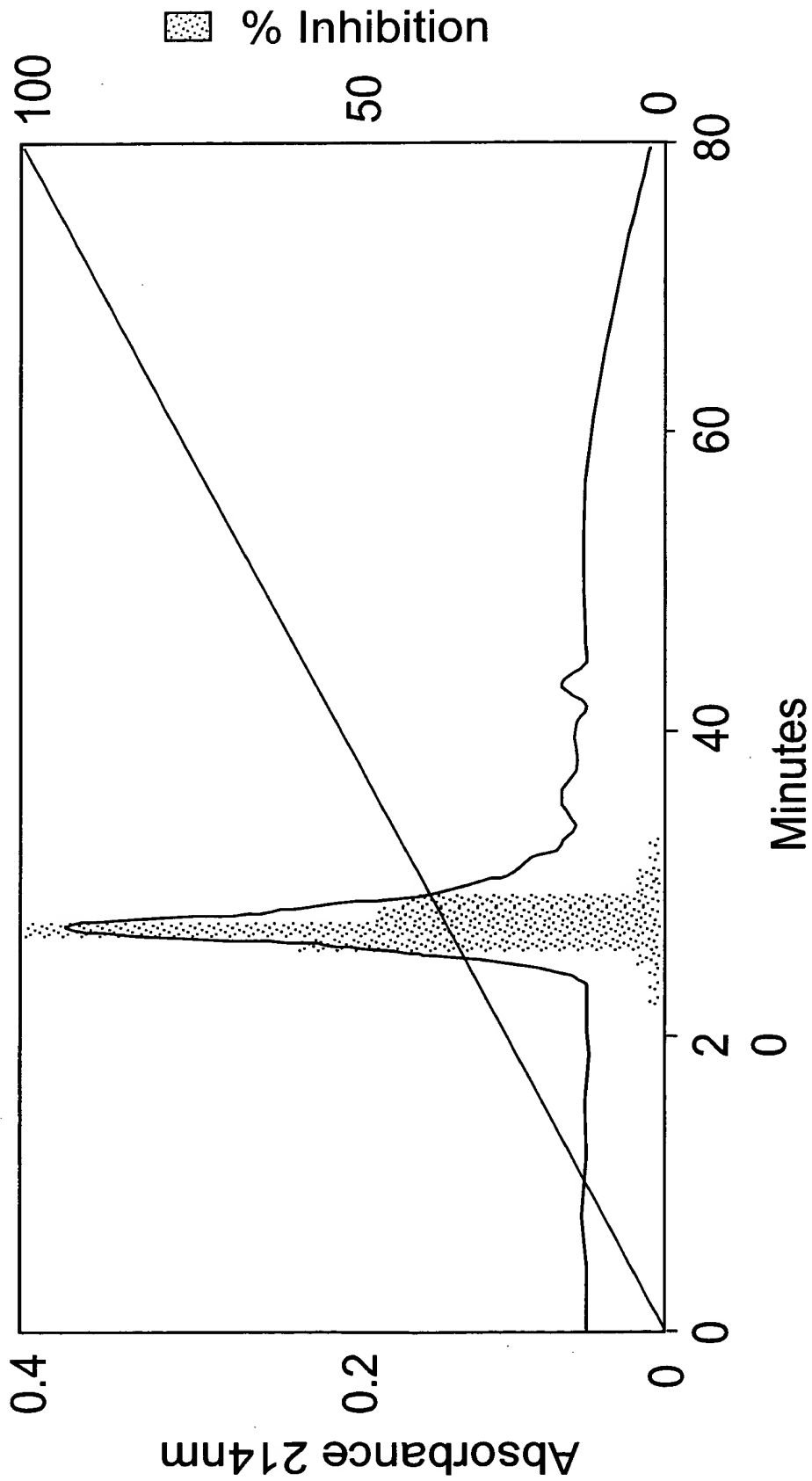


Fig. 3

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Mi2a	1	SEFDRQYE <u>E</u> CKRQ <u>C</u> MQLE-TSG-QMRR <u>C</u> VSQCD	32
Mi2b	1	NQEDPQTE <u>C</u> Q <u>Q</u> CR <u>R</u> CRQ <u>Q</u> E-SGPRQ <u>Q</u> Y <u>C</u> QRR <u>C</u> K	34
Mi2c	1	NRQDPQ <u>Q</u> Y <u>E</u> Q <u>C</u> QKH <u>C</u> QRR <u>E</u> -TEPRH <u>M</u> Q <u>T</u> CQQR <u>C</u> E	35
Mi2d	1	KRDPQ <u>Q</u> REY <u>E</u> DCRRR <u>C</u> EQ <u>Q</u> E--PRQ <u>Q</u> HQ <u>C</u> QLR <u>C</u> R	32
Cocoa-a	1	YERDPQ <u>Q</u> Y <u>E</u> Q <u>C</u> QRR <u>C</u> ES <u>E</u> A-TEERE <u>Q</u> EQ <u>C</u> EQ <u>R</u> CE	34
Cocoa-b	1	LQRQY <u>Q</u> Q <u>C</u> QGR <u>C</u> QEQ <u>Q</u> -QGORE <u>Q</u> Q <u>C</u> QK <u>C</u> W	30
Cotton-a	1	GDDDPKR <u>Y</u> EDCRRR <u>C</u> EWDT-RGQKE <u>Q</u> Q <u>C</u> EE <u>S</u> CK	34
Cotton-b	1	PEDPQR <u>Y</u> EE <u>C</u> Q <u>Q</u> ECRQ <u>Q</u> E--ERQ <u>Q</u> PQ <u>C</u> QQR <u>C</u> L	31
Cotton-c	1	SQRQ <u>F</u> Q <u>E</u> CQ <u>Q</u> H <u>C</u> HQ <u>Q</u> E-QRPEK <u>Q</u> Q <u>C</u> VRE <u>C</u> R	30
maize glb1_0 fr	1	EDDNHHHGHGKSGRCVRR <u>C</u> EDR--PWHQRP <u>R</u> CL <u>E</u> Q <u>C</u> R	36
barley glob fra	1	HDDEDDRGGHSLQ <u>Q</u> CVQRCRQ <u>Q</u> ER--PRYSHAR <u>C</u> VQ <u>E</u> CR	37
Peanut-a	1	TENP--CAQRCLQSCQ <u>Q</u> E--PDDLKQKA <u>C</u> ESR <u>C</u> T	30
alpha conglycin	1	ENP--KHNKCLQSCNSER--DSYRNQACHAR <u>C</u> N	29
SsAMP1 partial	1	VKEDHQFETRGEIL <u>E</u> CYRLCQ <u>Q</u> Q	23
SsAMP2 partial	1	QKHSQILG <u>C</u> YLXCQ <u>Q</u> L	17
SsAMP3 partial	1	LDPIRQQLCQMR <u>C</u> Q <u>Q</u> QEKD-PRQ <u>Q</u> Q <u>Q</u> CK	28

Fig. 4

REPLACEMENT SHEET

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Mi2a	33	KR FEED IDWSKYD	45
Mi2b	35	EI CEEE EY	43
Mi2c	36	RR YE KEKRKQKRYEEQQREDEEKYEERM KEEDN	69
Mi2d	33	EQQRQHGRGGDMNPNPQRGGSGRY EEGEE EQS	63
Cocoa-a	35	REYKEQQRQ EEEE	47
Cocoa-b	31	EQYKEQERGEHENYHNHKKNRS EEEGG QQR	60
Cotton-a	35	SQYGEKDQQQRHR	47
Cotton-b	32	KR FE QEQQQ	40
Cotton-c	31	EKYQENPWRGER	42
maize glb1	37	EEEREKRQERSRHEADDRSGEGSS	60
barley glob	38	DDQQQHGRHEQEEEQGRGRGWHGEG EREE	66
Peanut-a	31	KLEYDPR CV YDTGATNQRHPPGERT--RGRQP	60
alpha conglycin	30	LLKVEKEE CE EEGEI PR PRPRPQHPER	55
SsAMP1 partial	23		23
SsAMP2 partial	17		17
SsAMP3 partial	28		28

Fig. 4 (continued)

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AACTCTAGAG CGGCCGCGTC GACTATTTT ACAACAATTA CCAACAACAA CAAACAACAA 60

ACAACATTAC AATTACTATT TACAATTACA GGATCCACAA CAATGGCTTG GTTCCACGTT 120
      M A W      F H V>
      └─┬─┘
TCTGTTTGTA ACGCTGTTT CGTTGTTATT ATTATTATTA TGCTTCTTAT GTTCGTTCTCT 180
S V C N A V F V V I I I I M L L M F V P>

GTTGTTAGAG GTAGACAAAG AGATCCTCAA CAACAATACG AGCAATGTCA AAAGAGGTGT 210
V V R G R Q R D P Q Q Q Y E Q C Q K R C>
      ▲
CAAAGGAGAG AGACTGAGCC TAGACACATG CAAATTGTC AGCAAAGGTG TGAAGGAGG 240
Q R R E T E P R H M Q I C Q Q R C E R R>

TACGAGAAGG AGAAGAGGAA GCAACAAAAG AGGTGAGGAT CCGTCGACGC GGCCGCAGAT 270
Y E K E K R K Q Q K R *

CTAGACAA 278
```

Fig. 5

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Mi clone 1	1	MAINTSNLCSLFLLSL-FLLSLTVSLAE-----SEFDRQ EYEE	38
Mi clone 2	1	MAINTSNLCSLFLLSL-FLLSLTVSLAE-----SEFDRQ EYEE	38
Mi clone 3	0		0
cotton vicilin	1	MVRNKSACVVLLFSLFLSFGLLCSAKDFPGRRGDD-----	35
cocoa vicilin	1	MVISKSPFIVLIFSLLLSFALLCSGVSAYGRKQYER-----	36
		*. . * * * * * . . .	
Mi clone 1	39	CKRQCMQLETSGQMRR CVSQ CDKR FEED IDWSKYDNQEDPQTE CQ	83
Mi clone 2	39	CKRQCMQLETSGQMRR CVSQ CDKR FEED IDWSKYDNQ dd PQT dcQ	83
Mi clone 3	42	QCMQLETSGQMRR CVSQ CDKR FEED IDWSKYDNQEDPQTE CQ	83
cotton vicilin	36	-----DPPK RYE	42
cocoa vicilin	37	-----DPRQ QYE	43
		** .	
Mi clone 1	84	QCQRRCRQQESGPRQQQY CQ RR CKEI CEEE EY NRQR--DPQQ QY	126
Mi clone 2	84	QCQRRCRQQESGPRQQQY CQ RR CKEI CEEE EY NRQR--DPQQ QY	126
Mi clone 3	84	QCQRRCRQQES d PRQQQY CQ RR CKEI CEEE EY NRQR--DPQQ QY	126
cotton vicilin	43	DCRRRC CE WDTRGQKEQQ QCE ES CK SQYGEKDQQQRHPEDPQ RRY	87
cocoa vicilin	44	QCQRR CE SEATEERE EQCE QR CERE YKEQQR Q ---EEELQ RQY	85
		*.*** . . . * * * . . . * . . *	

Fig. 6

REPLACEMENT SHEET

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Mi clone 1	127	EQCQKhCQRRETEPRHMQTCCQRCERRYEKEKRKQKRYEEQQR E	171
Mi clone 2	127	EQCQ e RCQR h ETEPHMQTCQRCERRYEKEKRKQKRYEEQQR E	171
Mi clone 3	127	EQCQKRCCQRRETEPRHMQICQRCERRYEKEKRKQKRYEEQQR E	171
cotton vicilin	88	EECQQECRQQEE--RQPPCCQRCCLKR FF EQEQQ-----	118
cocoa vicilin	86	QQCGRCQEQQQGQREQQCCQRK CWEQY -KEQ-----	116
		..** * . . . * . . . * . . . *	
Mi clone 1	172	DEEKYEERMKEEDNKRDPQQREYEDCRRRC CEQ Q E --PRQQHQC Q 1	214
Mi clone 2	172	DEEKYEERMKEEDNKRDPQQREYEDCRRRC CEQ Q E --PRQQYQC Q R	214
Mi clone 3	172	DEEKYEERMKEgDNKRDPQQREYEDCRR h CEQ Q E--PRIQYQC Q R	214
cotton vicilin	119	-----QSQRQ FQ EC Q QHCHQ Q EQRPEKKQ Q CVR	146
cocoa vicilin	117	-----	116
Mi clone 1	215	RCREQQRQHGRGGD m NPQRGGSGRY EEGEE eQSDNPYF-DERS	258
Mi clone 2	215	RCREQQRQHGRGGDL i NPQRGGSGRY EEGEE KQSDNPYF-DERS	258
Mi clone 3	215	R Cq EQQRQHGRGGDLMPQRGGSGRY EEGEE KQSDNPYF-DERS	258
cotton vicilin	147	ECRE KY --QENPWRGER EEEE TE EEG EQEQSHNPFFH-HRRS	188
cocoa vicilin	117	-----ER-GEHENYHNHKKNR EEEE GGQQRNNPYFPKRRS	151
		** * * * * *	**

Fig. 6 (continued)

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Mi clone 1	259	LSTRFRTEEGHISVLENFYGRSKLLRALKNYRLVLLLEANPNAFVL	303
Mi clone 2	259	LSTRFRTEEGHISVLENFYGRSKLLRALKNYRLVLLLEANPNAFVL	303
Mi clone 3	259	LSTRFRTEEGHISVLENFYGRSKLLRALKNYRLVLLLEANPNAFVL	303
cotton vicilin	189	FQSRFREEHGNFRVLQRFASRHPILRGINEFRLSILEANPNTFFVL	233
cocoa vicilin	152	FQTRFRDEEGNFKILQRFaENSPPLKGINDYRLAMFEANPNTFIL	196
		*** * * . * . * . * . * . * . * . *	
Mi clone 1	304	PTHLDADAILLVIGGRGALKMIHhDNRESYNLECGDVIRIPAGTT	348
Mi clone 2	304	PTHLDADAILLVTGGRGALKMIHRDNRESYNLECGDVIRIPAGTT	348
Mi clone 3	304	PTHLDADAILLVIGGRGALKMIHRDNRESYNLECGDVIRIPAGTT	348
cotton vicilin	234	PHHCDAEKIYLVTNNGRGTLTFLTHENKESYNIVPGVVVKVPAGST	278
cocoa vicilin	197	PHHCDAEAIYFVTNGKGTITFTVTHENKESYNVQRTVVSVPAGST	241
		* * * * . * * . * . * . * . * . * . * . *	
Mi clone 1	349	FYLINRDNNERLHIAKFLQTISTPGQYKEFFPAGGQNPEPYLSTF	393
Mi clone 2	349	FYLINRDNNERLHIAKFLQTISTPGQYKEFFPAGGQNPEPYLSTF	393
Mi clone 3	349	FYLINRDNNERLHIAKFLQTISTPGQYKEFFPAGGQNPEPYLSTF	393
cotton vicilin	279	VYLANQDNKEKLI IAVLHRPVNNPGQFEFFPAGSQRPSYLAFA	323
cocoa vicilin	242	VYVVSQDNQEKLTI AVLALPVNSPGKYELFFPAGNNKPESYYGAF	286
		* . * * * * . * . * . * . * . * . * . *	

Fig. 6 (continued)

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Mi clone 1	394	SKEILEAALNTQTEkLRGVf----	GQRE-GVIIRASQEQIRELT	433
Mi clone 2	394	SKEILEAALNTQaERLRGVL----	GQRE-GVIISASQEQIRELT	433
Mi clone 3	394	SKEILEAALNTQTERLRGVL----	GQRE-GVIIRASQEQIRELT	433
cotton vicilin	324	SREILEPAFNTSRSEQLDELFGGRQSR	RRRQGGQ-MFRKASQEQIR	367
cocoa vicilin	287	SYEVLETVFNTQREKLEEEIL	EEQRGQKRQGGQGMFRKAKPEQIR	331
		* * *	** . . . *	
Mi clone 1	434	RDDSESRRhWHIRRGESSRGPYNLF	NKRPLYSNKYGQAYEVKPED	478
Mi clone 2	434	RDDSESRRWHIRRGESSRGPYNLF	NKRPLYSNKYGQAYEVKPED	478
Mi clone 3	434	RDDSESRRWHIRRGESSRGPYNLF	NKRPLYSNKYGQAYEVKPED	478
cotton vicilin	368	ALSQEATSPREK-SGE--RFAFNLLS	QTPRYSNQNGRFFEACPPE	409
cocoa vicilin	332	AISQQATSPRHR-GGE--RLAINLLS	QSPVYSNQNGRFFEACPED	373
		. . .	** * * . . *	
Mi clone 1	479	YRQLQDMDLSVFIANvTQGSMMGP	FFNTRSTKVVVVASGEADVEM	523
Mi clone 2	479	YRQLQDMDVSVFIANITQGSMMGP	FFNTRSTKVVVVASGEADVEM	523
Mi clone 3	479	YRQLQDMDVSVFIANITQGSMMGP	FFNTRSTKVVVVASGEADVEM	523
cotton vicilin	410	FRQLRDINVTVSALQLNQGSIFV	PHYNSKATFVILVTEGNGYAEM	454
cocoa vicilin	374	FSQFQNMDVAVSAFKLNQGAIFV	PHYNSKATFVFVTDGYGYAQM	418
		. * . . *	. . . * . . . *	

Fig. 6 (continued)

REPLACEMENT SHEET

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Mi clone 1	524	ACPHLSGRHGGRGGGRH EEEEED -----VHYEQVRARLSKREAI	563
Mi clone 2	524	ACPHLSGRHGGRGGGRH EEEEED -----VHYEQV k ARLSKREAI	563
Mi clone 3	524	ACPHLSGRHGGRGGGRH EEEEEE -----VHYEQVRARLSKREAI	563
cotton vicilin	455	VSPHLPRQSS YEEEEEEEEEE EQE EEEEER RRSGQYRKIRSLSRGD	499
cocoa vicilin	419	ACPHLSRQSQSGSRQDRR EQEEEESE ETTFGEFQQVKAPLSPGD	463
		*** . *	
Mi clone 1	564	---VLAGHPVVFVSSGNENLLLFAGINAQNNHEN-----FLAGR	600
Mi clone 2	564	---V p GHPPVVFVSSGNENLLLFAGINAQNNHEN-----FLAGR	600
Mi clone 3	564	---VLAGHPVVFVSSGNENLLLFAGINAQNNHEN-----FLAGR	600
cotton vicilin	500	IFVVPANFPVTFVASQNQNLRMTGFGLYNQININPDHNQIRIFVAGK	544
cocoa vicilin	464	VFVAPAGHAVTFFASKDQPLNAVAFGLNAQN-----NQRIFLAGR	503
		. * * * . * * * . * * .	
Mi clone 1	601	ERNVLQQIEPQAMELAFAPRKEVEE s FNSQ-D q SIFFPGPRQHQQ	645
Mi clone 2	601	ERNVLQQIEPQAMELAFAPRKEVEEELFNSQ-DESIFFPGPRQHQQ	645
Mi clone 3	601	ERNVLQQIEPQAMELAFAA s RKEVEEELFNSQ-DESIFFPGPRQHQQ	645
cotton vicili	545	INHVRQ-WDSQAKELAFGVSSRLVDEIFNSNPQES-YF-VSRQRQR	587
cocoa vicilin	504	-----PFFLNHKQNTN	514
		* . .	

Fig. 6 (continued)

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Mi clone 1	646	QSPRSTKQQQPLVSILDFVGF	666
Mi clone 2	646	QS s RRSTKQQQPLVSILDFVGF	666
Mi clone 3	646	QSPRSTKQQQPLVSILDFVGF	666
cotton vicilin	588	ASE	590
cocoa vicilin	515	VIKFTVKASAY	525

Fig. 6 (continued)

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MiAMP2c	1	10	20	30	40	47
	<u>RQRDPQQQYE</u>	<u>QCQKRCQRRE</u>	<u>TEPRHMQICQ</u>	<u>QRCERRYEKE</u>	<u>KRKQQKR</u>	
Gibrat method	CCCCCCCCCH	HHECCCCCCC	CCCCCCEEEC	CCCCCCCCHH	HHHHHHH	
Levin method	CCCCCHCCHH	HHHHHCHHT	HCSCCCECC	CHHTTHHHH	HHHCHH	
DPM method	CCCCCCCCCH	HHHHHHHHH	CHCCCHHEEH	HHHHHHHHH	HHHHHCC	
SOPMA method	CCCCCHHHH	HHHHEECC	CCCCHHEEE	EHHTHHHHH	HHHHHH	
PhD method	CCCCHHHHH	HHHHHHHHH	CCCCCHHHH	HHHHHHHHH	HHHHCCC	
Consensus	<u>CCCCCHCCHH</u>	<u>HHHHH-HH-</u>	<u>CCCC--EE-</u>	<u>-HHHHHHHH</u>	<u>HHHHHHH</u>	

Fig. 7

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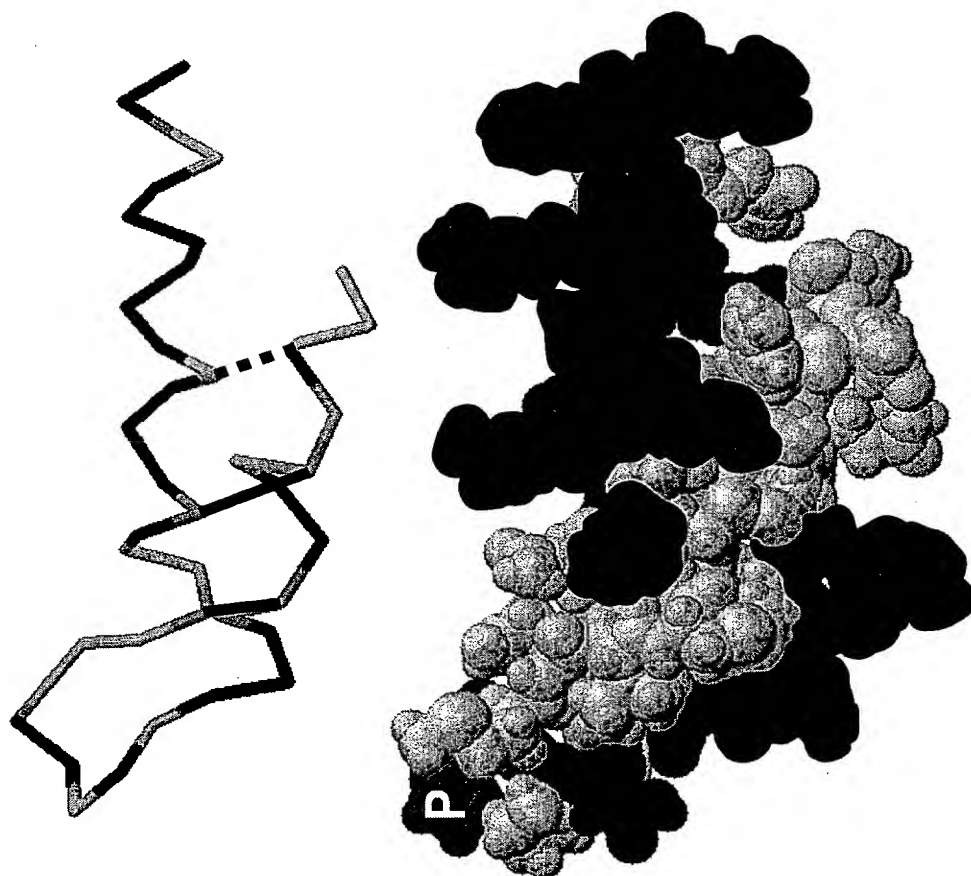


Fig. 8

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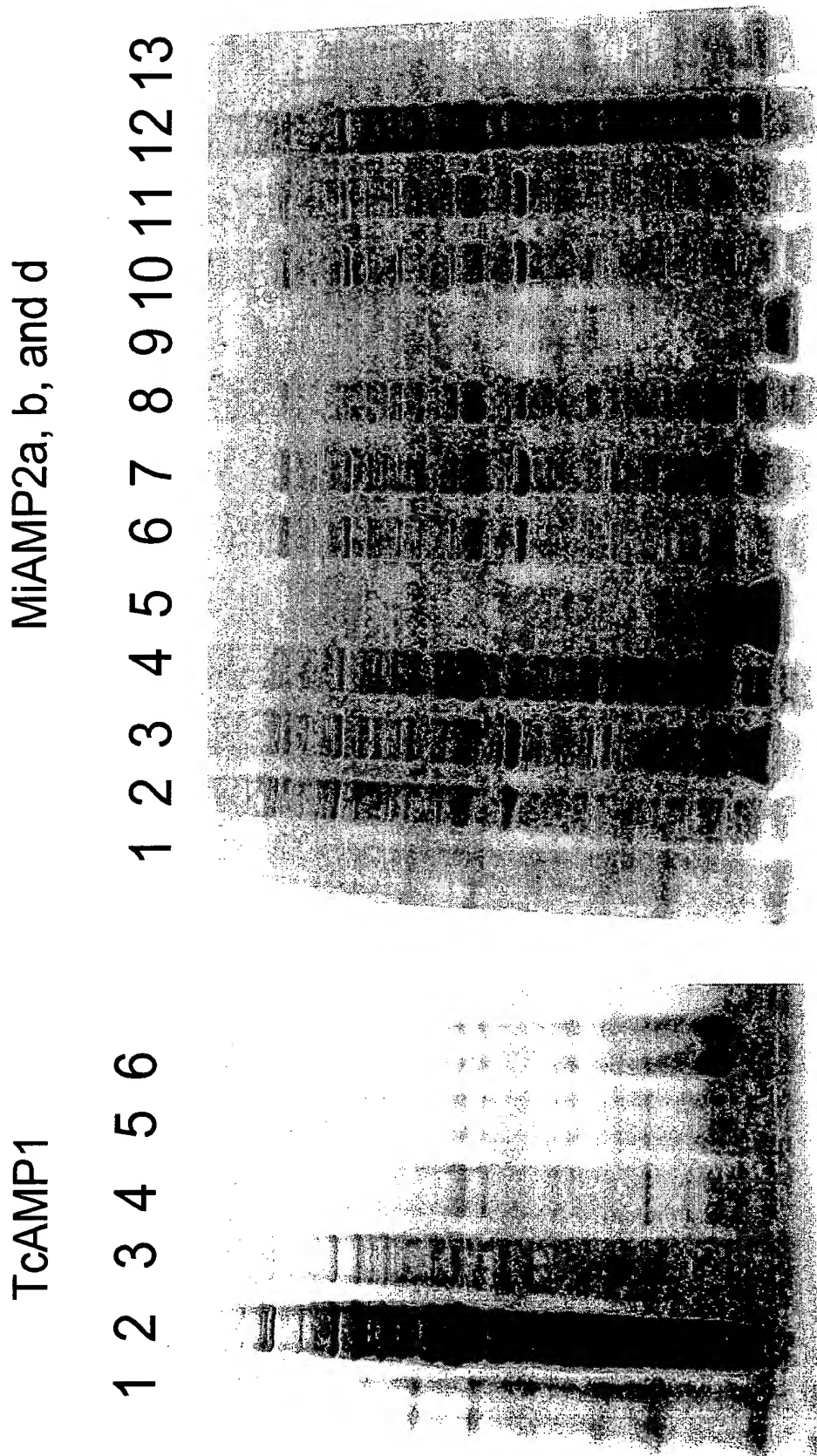


Fig. 9

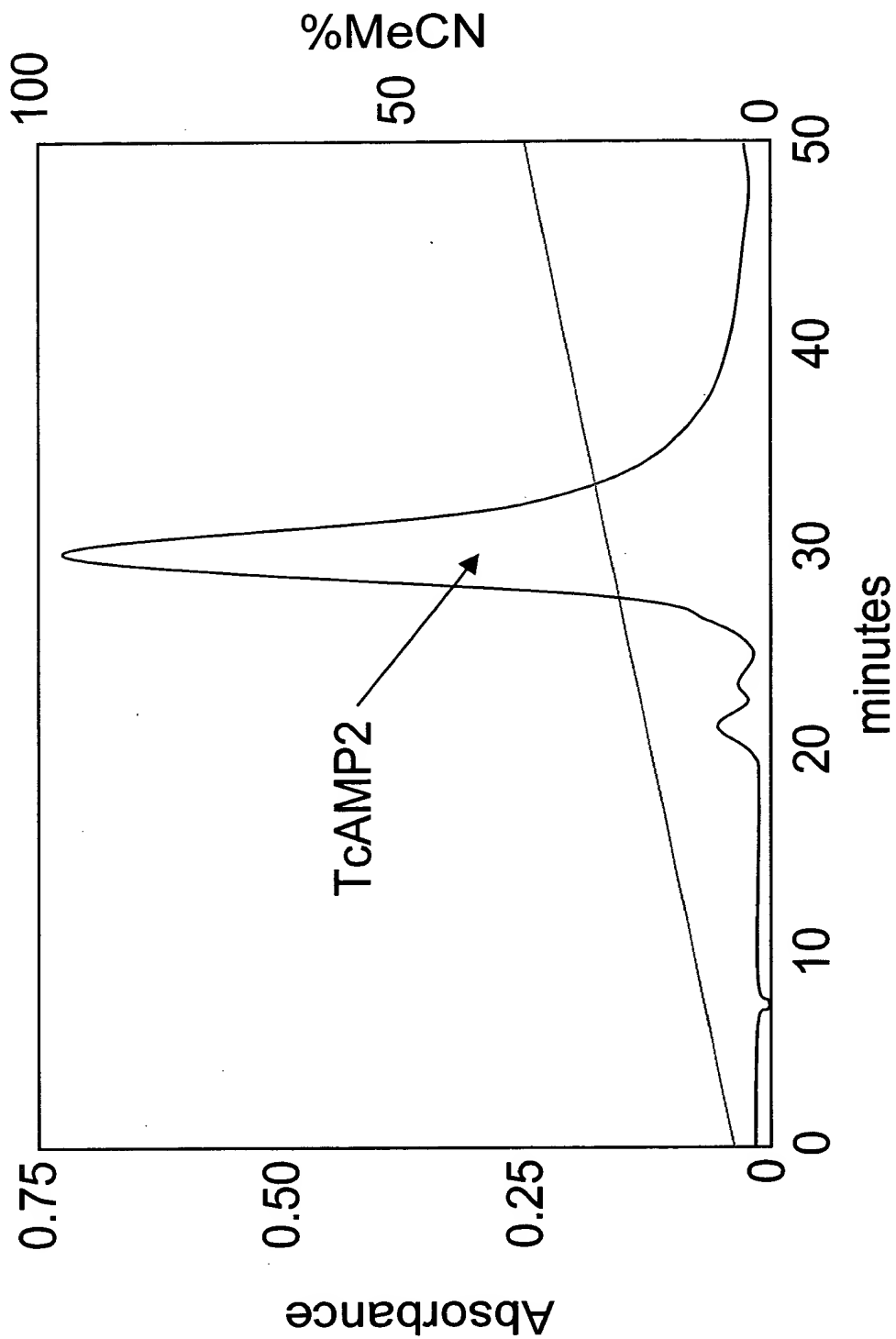


Fig. 10

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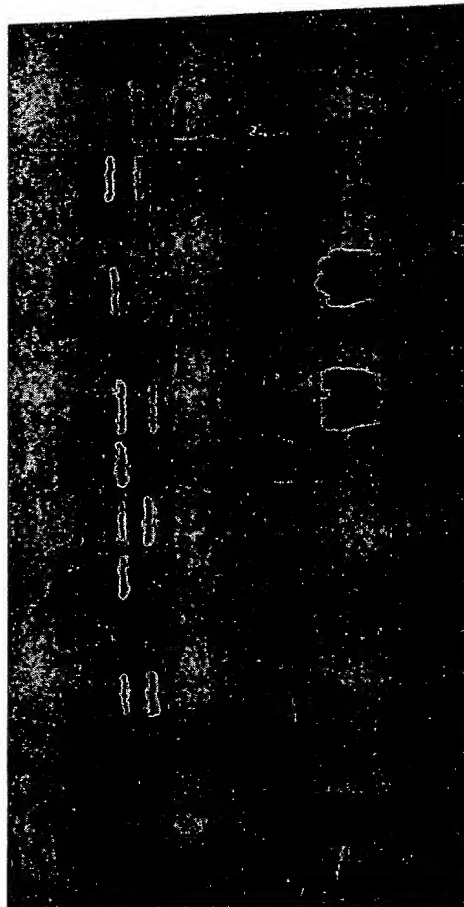
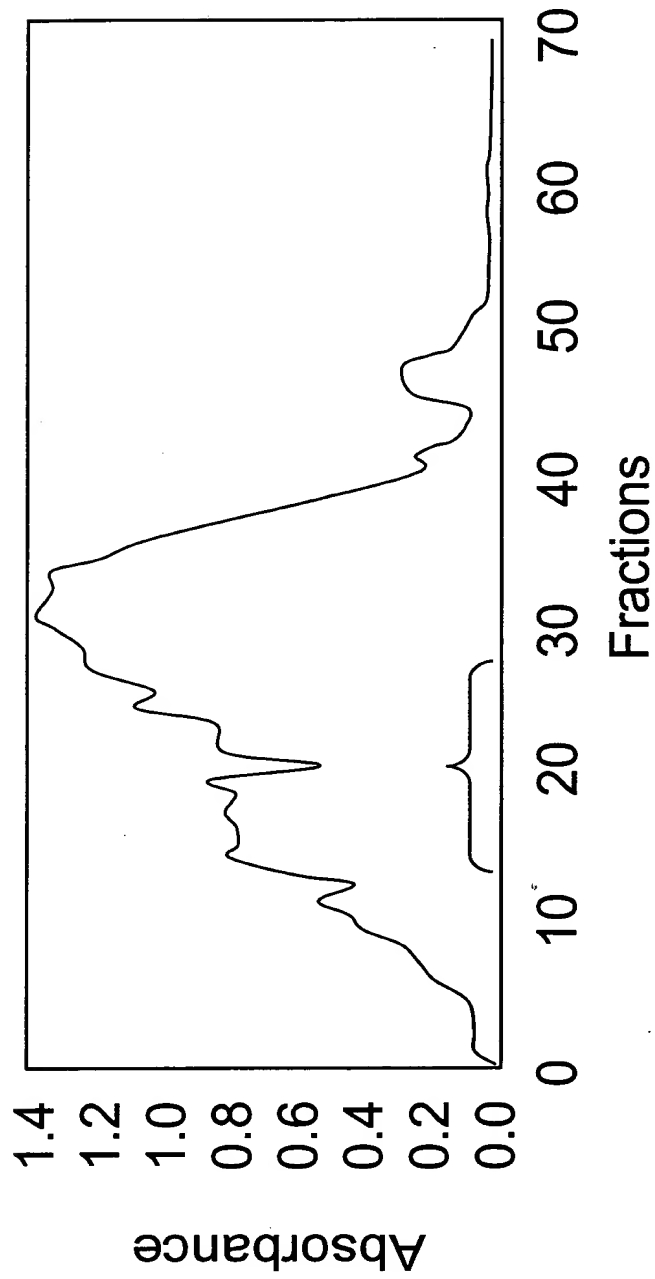


Fig. 11

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Fractions 14-28



Fig. 12

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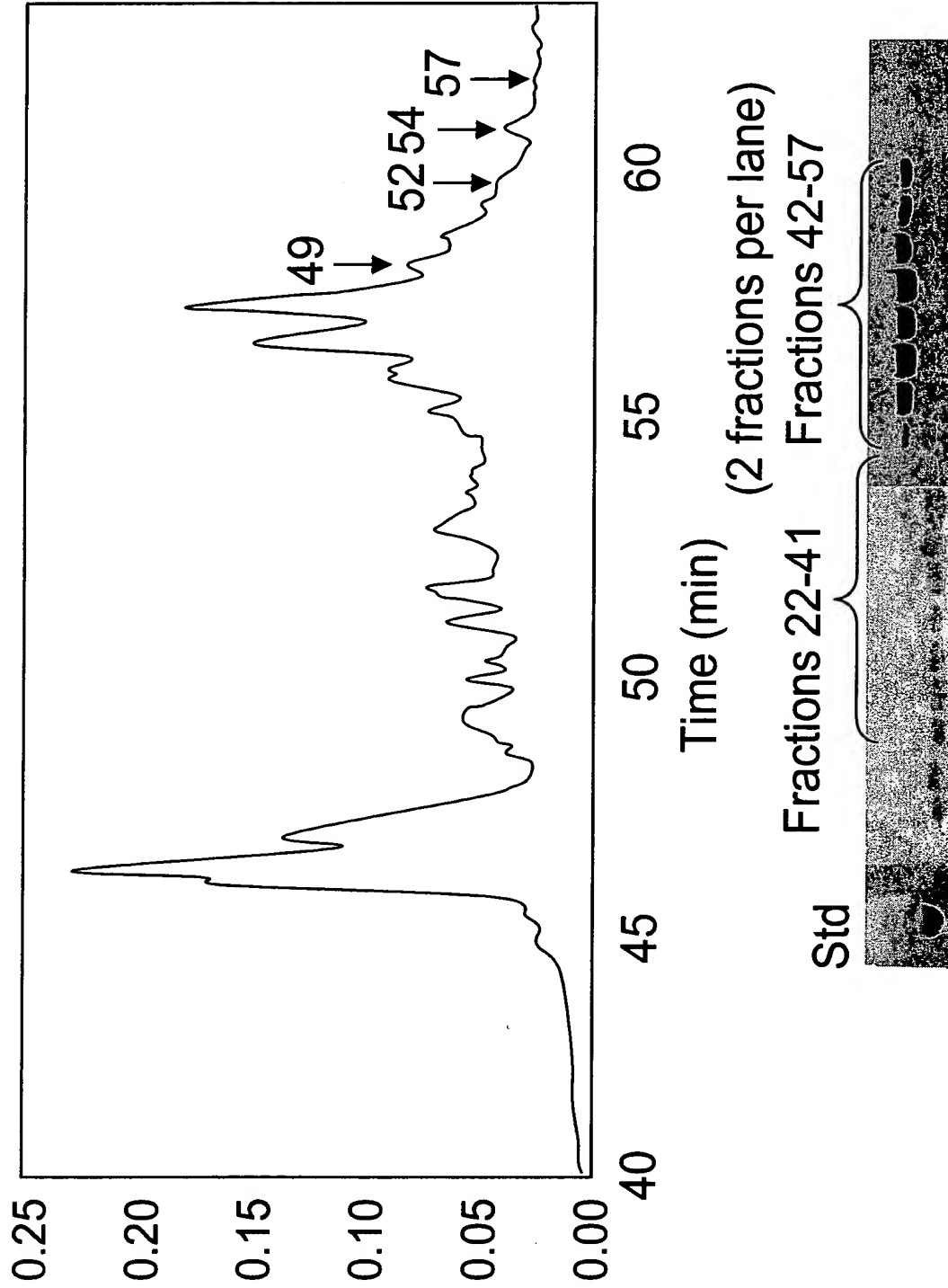


Fig. 13

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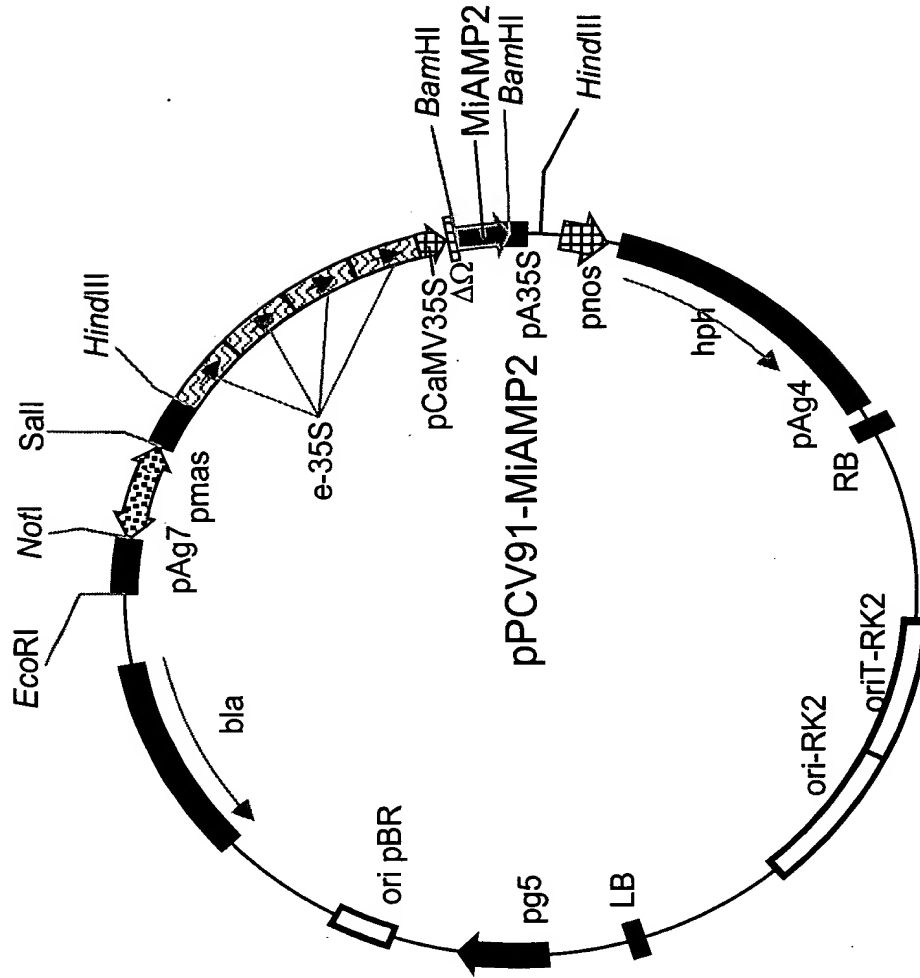


Fig. 14

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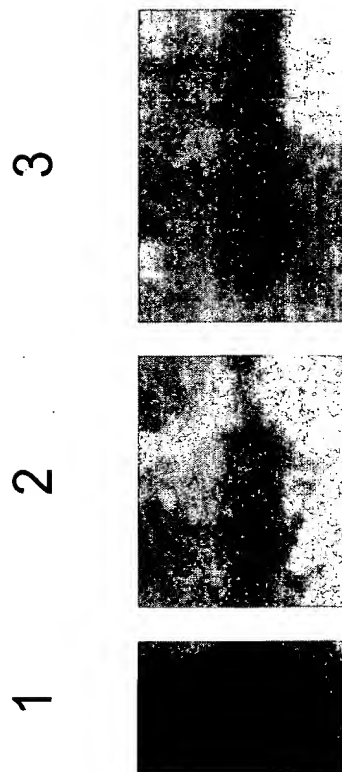


Fig. 15

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